State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #_____
HRI #_____
Trinomial_____
NRHP Status Code_____
Other Listings_____
Review Code_____ Reviewer_____ Date_____

 Resource name(s) or number(assigned by recorder) N-222

P1. Other Identifier: 2'x2' Transonic Wind Tunnel

***P2. Location:** ☒Not for Publication ☐Unrestricted ***a. County** Santa Clara
***b. USGS 7.5' Quad** San Francisco North, Calif. **Date:** 1995
***c. Address** 740 De France Avenue **City** Moffett Field **Zip** 94035
***e. Other Locational Data:**

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries.)

N-222 is a 2'X2' Transonic Wind Tunnel located within the N-221 complex. A simple metal shed connected to the larger N-221 complex serves the small tunnel. The tunnel wraps around the building on three sides. Entrance into the building is via a pair of double metal doors. The building is strictly utilitarian with no ornamentation. It is 3,350 sq. ft.

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This building appears to be in good condition.

***P3b. Resource Attributes:** (list attributes and codes) HP11– Engineering Structure (Wind Tunnel)

***P4. Resources Present:** ☒Building ☐Structure ☒Object ☐Site ☐District ☐Element of District ☐Other

P5a. Photo

P5b. Photo: (view and date)
View from De France Avenue, (8/12/05)

***P6. Date Constructed/Age and Sources:** 1951

***P7. Owner and Address:**
United States of America as represented by National Aeronautics and Space Administration (NASA)

***P8. Recorded by:**
Page & Turnbull, Inc.
724 Pine Street
San Francisco, CA 94108

***P9. Date Recorded:** 08/12/05

***P10. Survey Type:**
Reconnaissance

***P11. Report Citation:** Architectural Resources Group, *Building Evaluations, NASA Ames Research Center, Moffett Field, California* (July 27, 2001)

***Attachments:** ☐None ☐Location Map ☐Sketch Map ☐Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (list)

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Primary #_____
HRI#_____

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status Code** 5D3

***Resource Name or #** N-222

B1. Historic name: 2x2 ft Transonic Wind Tunnel
B2. Common name: 2x2 ft Transonic Wind Tunnel
B3. Original Use: Wind Tunnel B4. Present use: Vacant
***B5. Architectural Style:** Utilitarian
***B6. Construction History:** (Construction date, alterations, and date of alterations)
1951 – Date of Construction; 1963 – Interior alterations to workshop and control room

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:**_____ **Original Location:**_____
***B8. Related Features:**
Significant architectural features include the wind tunnel, shed roof, and corrugated metal exterior cladding.

B9a. Architect: National Advisory Committee for Aeromautics (NACA) Engineers b. Builder:
***B10. Significance: Theme** Post-War Science and Space Exploration **Area** NASA Ames Research Center
Period of Significance 1940-1952 **Property Type** Wind Tunnel **Applicable Criteria** 1
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity)

Building N-222 houses the 2x2 ft Transonic Wind Tunnel, which is a closed-return, variable density wind tunnel with an adjustable, flexible-wall nozzle and slotted test section. This research facility contributed to the testing of panel-flutter in aircrafts. This building is sited next to Building N-221 and is clad with corrugated metal. Although this building contributed to the development of aeronautical science, it does not appear to qualify for individual listing in the California Register of Historical Resources. This building possesses integrity of location, design, setting, materials, workmanship, feeling, and association.

See Continuation Sheet for technical description.

B11. Additional Resource Attributes: (List attributes and codes) (HP39) -- Wind Tunnel; (HP39) -- Research and Development Facility

***B12. References:**

- Architectural Resources Group, *Building Evaluations, NASA Ames Research Center, Moffett Field, California* (July 27, 2001)
- Edwin Hartman, *Adventures in Research: A History of Ames Research Center, 1940 – 1965* (NASA SP-4302, 1970).
- Elizabeth A. Muenger, *Searching the Horizon: A History of Ames Research Center, 1940 – 1976* (NASA SP-4304, 1985).
- Glenn Burgos, *Atmosphere of Freedom: Sixty Years at the NASA Ames Research Center* (NASA SP-4314, 2000).
- National Register of Historic Places nomination, *Ames Aeronautical Laboratory 40x80 Foot Wind Tunnel* (n.d.) [information obtained from NASA Ames Research Center staff]
- Donald Baels and William R. Corliss, *The Wind Tunnels of NASA* (NASA SP-440, 1981)
- National Aeronautics and Space Administration, *Technical Facilities Catalog*, Volume 1, publication NHB 8800.5A (1), October 1974.
- Technical Information Division, Ames Research Center, *Ames Research Facilities Summary,* 1974.

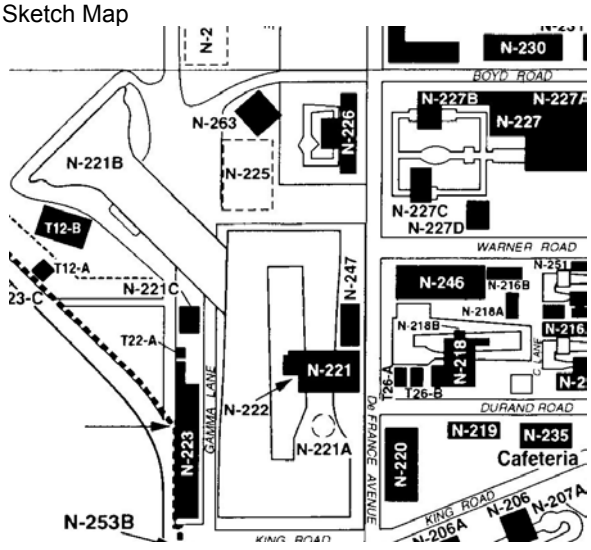
B13. Remarks:
In 1995, Section 110 survey documentation of the NASA Ames Research Center was submitted to the California State Historic Preservation Office (SHPO).

***B14. Evaluator:** Rich Sucre, Page & Turnbull, Inc.
724 Pine Street, San Francisco, CA 94108

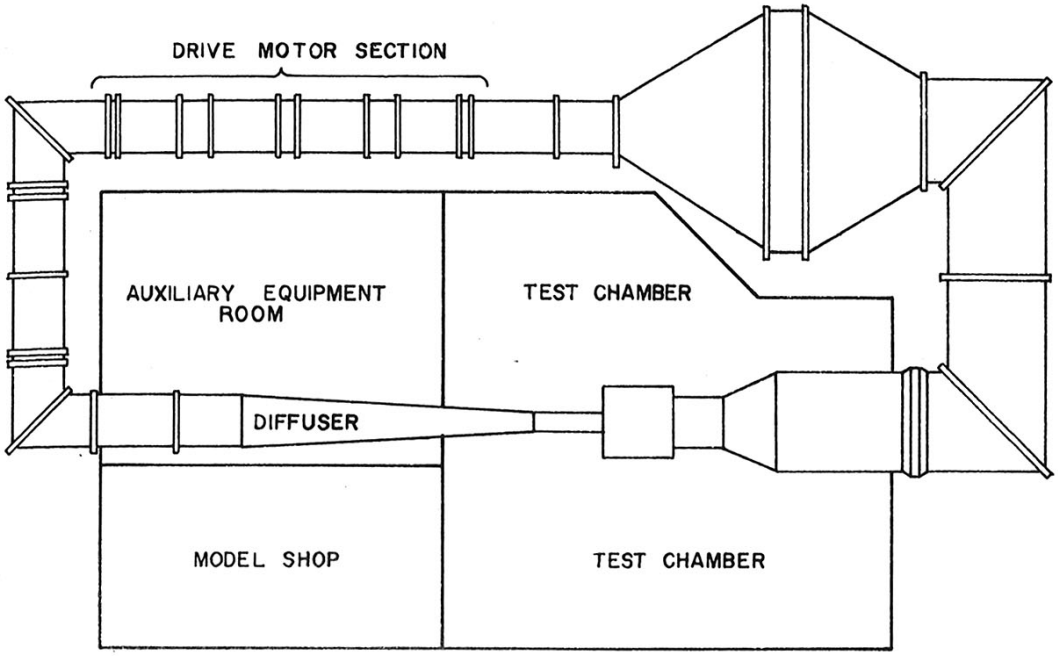
***Date of Evaluation:** 10/18/2005

(This space reserved for official comments.)

Sketch Map



N 222



DESCRIPTION

The 2-ft x 2-ft transonic wind tunnel is closed-return, variable-density with a 2-ft-square test section. It has an adjustable, flexible-wall nozzle and a slotted test section to permit transonic testing. The air is driven by a 2-stage, axial-flow compressor powered by 4 induction motors mounted in tandem. The drive system is rated 4000 hp. The speed of the motors is continuously variable over the operating range.

CHARACTERISTICS

Mach Number:	0.2 to 1.4, continuously variable
Reynolds Number, per ft:	0.5 x 10^6 to 8.7 x 10^6
Stagnation Pressure, atm:	0.16 to 3.0
Stagnation Temperature:	580°R
Test-Section Height, ft:	2.0
Test-Section Width, ft:	2.0
Test-Section Length, ft:	5.0
Test-Section Doors, ft:	2.0 high x 5.0 wide, in both sides of wind tunnel
CURRENT STATUS	INACTIVE

5. TWO-BY TWO-FOOT TRANSONIC WIND TUNNEL

DESCRIPTION:

The Two- by Two-Foot Transonic Wind Tunnel is a closed-return, variable-density tunnel equipped with an adjustabie, flexible-wall nozzle and a slotted test section. Airflow is produced by a two-stage, axial-flow compressor powered by four, variable-speed induction motors mounted in tandem, delivering a total of 4,000 horsepower. For conventional, steady-state testing models are generally supported on a sting. Internal, strain-gage balances are used for measuring forces and moments. (Additional facilities are available for measuring multiple steady or fluctuating pressures.)

This facility is also used for panel-flutter testing (one test-section wall is replaced with another containing the test specimen).

PERFORMANCE:

Mach Number	0.2 to 1.4 (continuously variable)
Stagnation Pressure	0.16 to 3.0 atmospheres
Reynolds Number	0.5×10^6 to 8.7×10^6 per foot
Stagnation Temperature	580° R

DIMENSIONS: Test Section

Height	2.0 feet
Width	2.0 feet
Length	5.0 feet
Access	Side doors — 2.0 X 5.0 feet

STATUS:

Operational since 1951

JURISDICTION:

Aeronautics Division
Experimental Investigations Branch
Stuart Treon

LOCATION:

Building N-222